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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/573,661	TOKAIRIN ET AL.	
	Examiner	Art Unit	
	Andrew K. Bohaty	4132	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *2006/03/28, 2006/09/13*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:

2. On page 33, paragraph [0034] the applicant states that “specific examples of the asymmetric pyrene-based compound represented by any one of the general formulae (VI) to (IX) are shown below”, but on page 35 the applicant shows examples (BH22-26) that do not meet the limitations of general formulae (VI) to (IX), but these examples meet the limitations of formulae (I-IV).

3. Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 5 and 7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. Regarding claim 5, the phrases “Ar's may be two or more," “the number of Ar^1s and the number of Ar^2s may be two or more,” and “the number of R^9s and the number of R^{10}s may be two or more" are indefinite. It is unclear whether the applicant means the number of Ar's, Ar^1s, Ar^2s, R^9s, and R^{10}s can be 0 or 1 or the number has to be two or more. The applicant uses the word may, which could mean that there are no Ar's, Ar^1s, Ar^2s, R^9s, or R^{10}s. Also, when looking at the specific examples in the specification

(pages 22-24) many of the examples (BH1-3 and BH5-13) do not contain Ar's, Ar^1s, Ar^2s, R^9s, and R^{10}s of two or more with respect to formulae (II)-(IV).

7. Regarding claim 7, the phrases "Ar^6s may be two or more," "the number of Ar^7s and the number of Ar^8s may be two or more," "the number of Ar^9s and the number of Ar^{10}s may be two or more," and "the number of R^{19}s and the number of R^{20}s may be two or more" is indefinite. It is unclear whether the applicant means the number of Ar^6s, Ar^7s, Ar^8s, Ar^9s, Ar^{10}s, R^{19}s, and R^{20}s can be 0 or 1 or the number has to be two or more. The applicant uses the word may, which could mean that there are no Ar^6s, Ar^7s, Ar^8s, Ar^9s, Ar^{10}s, R^{19}s, and R^{20}s. Also, when looking at the specific examples in the specification (pages 33-36) many of the examples (BH14-22) do not contain Ar^6s, Ar^7s, Ar^8s, Ar^9s, Ar^{10}s, R^{19}s, and R^{20}s of two or more with respect to formulae (VI)-(IX).

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-3, 8, and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Hatwar (US 2003/0068524) (hereafter "Hatwar").

10. With respect to claim 1, Hatwar teaches a white color organic electroluminescence device (abstract, Fig. 4 objects 420, 442, 450, and 470, paragraph [0076], Table 1 devices 2-5) comprising:

a cathode (470);

an anode (410); and

one or more organic thin film layers sandwiched between the two electrodes and including at least a light emitting layer (450), wherein the light emitting layer has a laminate comprising a bluish color light emitting layer (450) and a yellow-to-reddish color light emitting layer (442), although Hatwar does not explicitly teach two light emitting layers, Hatwar discloses a hole transporting layer (442) doped with fluorescent dye giving a second light emitting layer; and

the light emitting layer comprises an asymmetric compound containing a condensed ring (Table 1 devices 2-5, TBADN, paragraphs [0060] and [0062]).

11. With respect to claim 2, Hatwar teaches a white color organic electroluminescence device, wherein the light emitting layer consists of the bluish color light emitting layer and the yellow-to-reddish color light emitting layer (Table 1 device 2 paragraph [0089]).

12. With respect to claim 3, Hatwar teaches, a white color organic electroluminescence device, wherein the bluish color light emitting layer comprises a bluish color host material (paragraphs [0060], [0061], and [0064], Table 1 devices 2-5 TBADN) and a bluish color dopant (paragraphs [0065]-[0069], Table 1 devices 2-5, TBP), and the bluish color host material comprises an asymmetric compound containing a condensed ring (paragraphs [0060], [0061], and [0064], Table 1 devices 2-5 TBADN).

13. With respect to claim 8, Hatwar teaches a white color organic electroluminescence device according, wherein the bluish color dopant comprises at

least one compound selected from a compound containing a fused aromatic ring (paragraphs [0065]-[0069], Table 1 devices 2-5, TBP).

14. With respect to claim 12, Hatwar teaches a white color organic electroluminescence device, wherein each of the bluish color light emitting layer and the yellow-to-reddish color light emitting layer has a thickness of 5 nm or more (Table 1 devices 2-5).

Claim Rejections - 35 USC § 103

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

16. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

17. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hatwar (US 2003/0068524) (hereafter "Hatwar"), as applied to claims 1-3, 8, and 12 above, and further in view of Shi et al. (US 2002/0028346) (hereafter "Shi").

18. With respect to claims 4 and 5, Hatwar teaches a white color organic electroluminescence device, wherein the asymmetric compound containing a

condensed ring comprises an asymmetric anthracene-based compound (Table 1 devices 2-5, TBADN, paragraphs [0060] and [0062]).

19. Hatwar does not teach a white color organic electroluminescence device, wherein the asymmetric compound containing a condensed ring comprises an asymmetric anthracene-based compound represented by the general formulae (I)-(IV).

20. With respect to claim 4, Shi teaches an organic electroluminescence device (abstract), wherein the asymmetric compound containing a condensed ring comprises an asymmetric anthracene-based compound represented by the following general formula (I) (fomula (I), paragraphs [0015]-[0017]):

wherein Ar^1 and Ar^2 each independently represent a substituted or unsubstituted aryl group having 6 to 20 nuclear carbon atoms; and R^1 to R^8 each independently represent a hydrogen atom, a substituted or unsubstituted aryl group having 6 to 20 nuclear carbon atoms, a substituted or unsubstituted aromatic heterocyclic group having 5 to 24 nuclear atoms, a substituted or unsubstituted alkyl group having 1 to 24 carbon atoms, a halogen atom, or a cyano group (formulae (I) and (II), paragraphs [0015]-[0021]). Shi teaches that Ar^1 and Ar^2 can be independently selected, so an asymmetric anthracene could be made.

21. With respect to claim 5, Shi teaches an organic electroluminescence device (abstract), wherein the asymmetric compound containing a condensed ring comprises an asymmetric anthracene-based compound represented by any one of the following general formulae (II) to (IV) (formulae III-XI, paragraphs [0022]-[0027]):

formula (II) (formulae VI, VII, X, and XI, paragraphs [0025]-[0027], compounds 47, 48, 50, 51, 52, 54, 55, 56, 57, 58, and 59) wherein Ar represents a substituted or unsubstituted fused aromatic ring residue having 10 to 50 nuclear carbon atoms;

Ar' represents a substituted or unsubstituted aryl group having 6 to 20 nuclear carbon atoms, and the number of Ar's may be two or more;

X represents a substituted or unsubstituted aryl group having 6 to 20 nuclear carbon atoms, a substituted or unsubstituted aromatic heterocyclic group having 5 to 24 nuclear atoms, a substituted or unsubstituted alkyl group having 1 to 24 carbon atoms, a halogen atom, or a cyano group; and

a, b, and c each represent an integer of 0 to 4, and n represents an integer of 1 to 3;

formula (III) (formulae (IV, V, and VIII, paragraph [0025]-[0027], compounds 58 and 59) wherein A^1 and A^2 each independently represent a substituted or unsubstituted fused aromatic ring residue having 10 to 20 nuclear carbon atoms;

Ar^1 and Ar^2 each independently represent a hydrogen atom, or a substituted or unsubstituted aryl group having 6 to 20 nuclear carbon atoms, and each of the number of Ar^1s and the number of Ar^2s may be two or more; and

R^1 to R^{10} each independently represent a hydrogen atom, a substituted or unsubstituted aryl group having 6 to 20 nuclear carbon atoms, a substituted or unsubstituted aromatic heterocyclic group having 5 to 24 nuclear atoms, a substituted or unsubstituted alkyl group having 1 to 24 carbon atoms, a halogen atom, or a cyano group, and each of the number of R^9s and the number of R^{10}s may be two or more, provided that no symmetrical group binds to each of 9-position and 10-position of central anthracene;

formula (IV) (formula III, paragraphs [0025]-[0027], compounds 45, 46, and 53) wherein $Ar^{1'}$ and $Ar^{2'}$ each independently represent a substituted or unsubstituted aryl group having 6 to 20 nuclear carbon atoms, and each of the number of $Ar^{1'}$s and the number of $Ar^{2'}$s may be two or more; and

R^1 to R^{10} each independently represent a hydrogen atom, a substituted or unsubstituted aryl group having 6 to 20 nuclear carbon atoms, a substituted or unsubstituted aromatic heterocyclic group having 5 to 24 nuclear atoms, a substituted or unsubstituted alkyl group having 1 to 24 carbon atoms, a halogen atom, or a cyano group, and each of the number of R^9s and the number of R^{10}s may be two or more, provided that no symmetrical group binds to each of 9-position and 10-position of central anthracene.

22. It would have been obvious by one of ordinary skill in the art at the time the invention was made to substitute the asymmetric anthracene (TBADN) in the white organic electroluminescence device, of Hatwar, with the asymmetric compounds taught by Shi (formulae formulae I-XI and compounds 45-48 and 50-59) to arrive at a white organic electroluminescence device, wherein the asymmetric compound containing a condensed ring comprises an asymmetric anthracene-based compound represented by the general formulae (I)-(IV). Both Hatwar and Shi teach the same asymmetric anthracene compound (TBADN in Hatwar and compound 39 in Shi) can be used in organic electroluminescence devices, and Shi teaches other asymmetric compounds that have similar properties to TBADN. One of ordinary skill in the art would have been motivated to substitute the asymmetric compound of Hatwar (TBADN) with the asymmetric compounds of Shi because all of the compounds can be used in an

electroluminescence device, and because it would be a simple substitution of material for one of ordinary skill in the art that would lead to predictable results of light emission from a light emitting layer comprising of an asymmetric anthracene compound.

23. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hatwar (US 2003/0068524) (hereafter "Hatwar"), as applied to claims 1-3, 8, and 12 above, and further in view of Kohama et al. (JP 2002-063988) (hereafter "Kohama").

24. With respect to claims 6 and 7, Hatwar does not teach a white color organic electroluminescence device, wherein the asymmetric compound containing a condensed ring comprises an asymmetric pyrene-based compound represented by the following general formulae (V)-(IX).

25. With respect to claim 6, Kohama teaches an organic electroluminescence device (paragraph [0016]), wherein the asymmetric compound containing a condensed ring comprises an asymmetric pyrene-based compound represented by the following general formula (V) (paragraph [0019], formula (1), paragraphs [0021] and [0021]):
wherein Ar^3 and Ar^4 each independently represent an aryl group, provided that Ar^3 and Ar^4 do not have the same structure (paragraphs [0021] and [0021]); and
R^{11} to R^{18} each independently represent a hydrogen atom, an aryl group, aromatic heterocyclic group, an alkyl group, an alkoxy group, an aralkyl, an arylthio group, a carboxyl group, a halogen atom, a cyano group, a nitro group, or a hydroxyl group (paragraphs [0021] and [0021]).

26. With respect to claim 7, Kohama teaches an organic electroluminescence device (paragraph [0016]), wherein the asymmetric compound containing a condensed ring

comprises an asymmetric pyrene-based compound represented by the following general formula (VI) to (IX) (paragraph [0019], formula (1), paragraphs [0021] and [0021]):

formula (VI) wherein Ar^5 represents an fused aromatic ring residue nuclear carbon atoms (paragraphs [0021] and [0021]);

Ar^6 represents an aryl group having 6 to 30 nuclear carbon atoms, and the number of Ar^6s may be two or more (paragraphs [0021] and [0021]);

X^1 and X^2 each independently represent an aryl group, an heterocyclic group, an alkyl group, an alkoxy group, an arylakyl group, an arylthio group, a carboxyl group, a halogen atom, a cyano group, a nitro group, or a hydroxyl group (paragraphs [0021] and [0021]); and

d represents an integer of 0 to 8, e represents an integer of 0 to 4, and n^1 represents an integer of 1 to 3 (paragraphs [0021] and [0021]);

formula (VII) wherein Ar^7 and Ar^8 each independently represent an aryl group, and each of the number of Ar^7s and the number of Ar^8s may be two or more (paragraphs [0021] and [0021]);

X^3, X^4, and X^5 each independently represent an aryl group, an aromatic heterocyclic group, an alkyl group, an alkoxy group, an arylakyl group, an arylthio group, a carboxyl group, a halogen atom, a cyano group, a nitro group, or a hydroxyl group (paragraphs [0021] and [0021]); and

f and g each represent an integer of 0 to 4, h represents an integer of 0 to 8, and n^2 represents an integer of 1 to 3, provided that no symmetrical group binds to each of 1-position and 6-position of central pyrene (paragraphs [0021] and [0021]);

formula (VIII) wherein A^3 and A^4 each independently represent a substituted or unsubstituted fused aromatic ring residue (paragraphs [0021] and [0021], aryl group);

Ar^9 and Ar^{10} each independently represent a hydrogen atom, or a substituted or unsubstituted aryl group, and each of the number of Ar^9s and the number of Ar^{10}s may be two or more (paragraphs [0021] and [0021]); and

R^{11} to R^{20} each independently represent a hydrogen atom, an aryl group, an aromatic heterocyclic group, an alkyl group, an alkoxy group, an aralkyl group, an arylthio group, a carboxyl group, a halogen atom, a cyano group, a nitro group, or a hydroxyl group, and each of the number of R^{19}s and the number of R^{20}s may be two or more, provided that no symmetrical group binds to each of 1-position and 6-position of central pyrene (paragraphs [0021] and [0021]);

formula (IX) wherein Ar^{11} and Ar^{12} each independently represent an aryl group having 6 to 50 nuclear carbon atoms (paragraphs [0021] and [0021]);

X^6 and X^7 each independently represent an aryl group, an aromatic heterocyclic group, an alkyl group, an alkoxy group, an aralkyl group, an arylthio group, a carboxyl group, a halogen atom, a cyano group, a nitro group, or a hydroxyl group (paragraphs [0021] and [0021]);

L represents an arylene group (paragraphs [0021] and [0021]); and

i and j each represent an integer of 0 to 8, and n^3 and n^4 each represent an integer of 1 to 3 (paragraphs [0021] and [0021]).

27. Kohama teaches that bulky and amorphous pyrene skeletons suppress crystallization leading to prolonged luminescent and stability (paragraph [0017]).

28. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the white organic electroluminescence device, of Hatwar, with the asymmetric compound containing a condensed ring comprises an asymmetric pyrene-based compound represented by the general formulae (V)-(IX). The motivation would have been to produce a white organic electroluminescence device with an increased luminescence and stability.

29. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hatwar (US 2003/0068524) (hereafter "Hatwar"), as applied to claims 1-3, 8, and 12 above, and further in view of Hosokawa et al. (US 6,534,199) (hereafter "Hosokawa").

30. With respect to claim 8, Hatwar does not teach a white color organic electroluminescence device, wherein the bluish color dopant comprises at least one compound selected from a styrylamine.

31. Hosokawa teaches a blue organic electroluminescence device, wherein the bluish color dopant comprises at least one compound selected from a styrylamine (abstract, column 3 lines 11-19). Hosokawa teaches an electroluminescence device comprising a styrylamine in the light emitting medium exhibits excellent heat resistance, long life and a higher efficiency (column 2 lines 24-32).

32. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the white organic electroluminescence device, of Hatwar, wherein the bluish color dopant comprises at least one compound is selected from a styrylamine. The motivation would have been to produce a white organic electroluminescence device with an increased heat resistance and efficiency.

33. Claims 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hatwar (US 2003/0068524) (hereafter "Hatwar"), as applied to claims 1-3, 8, and 12 above, and further in view of Fukuoka et al. (JP 2003-272857) (hereafter "Fukuoka").

34. With respect to claim 9, Hatwar teaches a white color organic electroluminescence device (Fig. 5 objects 520, 550, 561, and 570, paragraph [0076], Table 2 device 6), comprising the anode (520), the bluish color light emitting layer (550), the yellow-to-reddish color light emitting layer (561), and the cathode (570) in this order, although Hatwar does not explicitly teach two light emitting layers, Hatwar discloses an electron transporting layer (561) doped with a yellow fluorescent dye giving a second light emitting layer (Table 2 device 6).

35. Hatwar does not teach a white color organic electroluminescence device, comprising the anode, the bluish color light emitting layer, the yellow-to-reddish color light emitting layer, and the cathode in this order, wherein the yellow-to-reddish color light emitting layer contains the same host material as that of the bluish color light emitting layer and a yellow-to-reddish color dopant.

36. Fukuoka teaches a white color organic electroluminescence device (paragraph [0013]), comprising the anode (paragraph [0013]), the bluish color light emitting layer

(paragraph [0013]), the yellow-to-reddish color light emitting layer (paragraph [0013]), and the cathode in this order (paragraph [0013]), wherein the yellow-to-reddish color light emitting layer contains the same host material as that of the bluish color light emitting layer and a yellow-to-reddish color dopant (paragraph [0038]) for the purpose of producing a white color organic electroluminescence device with increased luminous efficiency and better white luminescence (paragraphs [0004]-[0006]).

37. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the white organic electroluminescence device, of Hatwar, wherein the yellow-to-reddish color light emitting layer contains the same host material as that of the bluish color light emitting layer and a yellow-to-reddish color dopant. The motivation would have been to produce a white organic electroluminescence device with increased luminous efficiency and better white luminescence.

38. With respect to claim 10, Fukuoka teaches a white color organic electroluminescence device (paragraph [0013]), wherein the yellow-to-reddish color dopant comprises a compound having multiple fluoranthene skeletons (paragraphs [0038]-[0043], [0048]-[0050], and [0052]) for the purpose of producing a white color organic electroluminescence device with increased luminous efficiency and better white luminescence (paragraphs [0004]-[0006]).

39. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the white organic electroluminescence device, of Hatwar, wherein the yellow-to-reddish color dopant comprises a compound having multiple fluoranthene skeletons. The motivation would have been to produce a white organic

electroluminescence device with increased luminous efficiency and better white luminescence.

40. With respect to claim 11, Fukuoka teaches a white color organic electroluminescence device (paragraph [0013]), wherein the yellow-to-reddish color dopant comprises a compound having a fluorescent peak wavelength of 540 nm to 700 nm (paragraph [0058]) for the purpose of producing a white color organic electroluminescence device with increased luminous efficiency and better white luminescence (paragraphs [0004]-[0006]).

41. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the white organic electroluminescence device, of Hatwar, wherein the yellow-to-reddish color dopant comprises a compound having a fluorescent peak wavelength of 540 nm to 700 nm. The motivation would have been to produce a white organic electroluminescence device with increased luminous efficiency and better white luminescence.

42. Claims 1-5 and 8-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukuoka et al. (WO 2005/011333) (wherein (US 2008/0067928) (hereafter "Fukuoka '928") is used as the US translated version), in view of Shi et al. (US 2002/0028346) (hereafter "Shi").

43. With respect to claim 1, Fukuoka '928 teaches a white color organic electroluminescence device (abstract, Fig. 1 objects 8, 6, 5, and 2, paragraphs [0017]-[0022], [0037], and [0041], example 1 paragraphs [0086]-[0092]) comprising:

a cathode (8);

an anode (2); and

one or more organic thin film layers sandwiched between the two electrodes and including at least a light emitting layer (6 and 5), wherein the light emitting layer has a laminate comprising a bluish color light emitting layer (5) and a yellow-to-reddish color light emitting layer (6).

44. Fukuoka '928 does not teach the light emitting layer comprising an asymmetric compound containing a condensed ring.

45. Shi teaches asymmetric compounds that can be use in an organic electroluminescent device (formulae I, VI-XI, paragraphs [0011]-[0018], [0025], [0026], and [0027]).

46. It would have been obvious by one of ordinary skill in the art at the time the invention was made to substitute the anthracene in the white organic electroluminescence device, of Fukuoka '928, with the asymmetric compounds taught by Shi (formulae formulae I, VI-XI and compounds 45-48 and 50-59) to arrive at a white organic electroluminescence device, wherein the light emitting layer comprising an asymmetric compound containing a condensed ring. Both Fukuoka '928 and Shi teach that the same anthracene compounds (formula 1, paragraph [0041] in Fukuoka '928 and formula II, paragraph [0019]-[0021] in Shi) can be used in organic electroluminescence devices, and Shi teaches other anthracene compounds, but are asymmetric (formulae VI-XI, paragraphs [0018], [0025], [0026], and [0027]) that have similar properties anthracene compounds taught by both Fukuoka '928 and Shi. One of ordinary skill in the art would have been motivated to substitute the anthracene

compound of Fukuoka '928 with the asymmetric anthracene compounds of Shi because all of the compounds can be used in an electroluminescence device, and because it would be a simple substitution of material for one of ordinary skill in the art that would lead to predictable results of light emission from a light emitting layer comprising of an asymmetric anthracene compound.

47. With respect to claim 2, Fukuoka '928 teaches a white color organic electroluminescence device, wherein the light emitting layer consists of the bluish color light emitting layer and the yellow-to-reddish color light emitting layer (Fig. 1 objects 8, 6, 5, and 2, paragraphs [0017]-[0022], [0037], and [0041], example 1 paragraphs [0086]-[0092]).

48. With respect to claim 3, Fukuoka '928 teaches, a white color organic electroluminescence device, wherein the bluish color light emitting layer comprises a bluish color host material (paragraphs [0036], [0037], and [0041], example 1 paragraphs [0086]-[0092]), and the bluish color host material comprises an asymmetric compound containing a condensed ring (paragraphs [0036], [0037], and [0041], example 1 paragraphs [0086]-[0092]).

49. With respects to claims 4 and 5, Fukuoka '928 does not teach a white color organic electroluminescence device, wherein the asymmetric compound containing a condensed ring comprises an asymmetric anthracene-based compound represented by general formulae I-IX.

50. With respect to claim 4, Shi teaches an organic electroluminescence device (abstract), wherein the asymmetric compound containing a condensed ring comprises

an asymmetric anthracene-based compound represented by the following general formula (I) (fomula (I), paragraphs [0015]-[0017]):

wherein Ar^1 and Ar^2 each independently represent a substituted or unsubstituted aryl group having 6 to 20 nuclear carbon atoms; and R^1 to R^8 each independently represent a hydrogen atom, a substituted or unsubstituted aryl group having 6 to 20 nuclear carbon atoms, a substituted or unsubstituted aromatic heterocyclic group having 5 to 24 nuclear atoms, a substituted or unsubstituted alkyl group having 1 to 24 carbon atoms, a halogen atom, or a cyano group (fomulae (I) and (II), paragraphs [0015]-[0021]). Shi teaches that Ar^1 and Ar^2 can be independently selected, so an asymmetric anthracene could be made.

51. With respect to claim 5, Shi teaches an organic electroluminescence device (abstract), wherein the asymmetric compound containing a condensed ring comprises an asymmetric anthracene-based compound represented by any one of the following general formulae (II) to (IV) (formulae III-XI, paragraphs [0022]-[0027]):

formula (II) (formulae VI, VII, X, and XI, paragraphs [0025]-[0027], compounds 47, 48, 50, 51, 52, 54, 55, 56, 57, 58, and 59) wherein Ar represents a substituted or unsubstituted fused aromatic ring residue having 10 to 50 nuclear carbon atoms;

Ar' represents a substituted or unsubstituted aryl group having 6 to 20 nuclear carbon atoms, and the number of Ar's may be two or more;

X represents a substituted or unsubstituted aryl group having 6 to 20 nuclear carbon atoms, a substituted or unsubstituted aromatic heterocyclic group having 5 to 24 nuclear

atoms, a substituted or unsubstituted alkyl group having 1 to 24 carbon atoms, a halogen atom, or a cyano group; and

a, b, and c each represent an integer of 0 to 4, and n represents an integer of 1 to 3;

formula (III) (formulae (IV, V, and VIII, paragraph [0025]-[0027], compounds 58 and 59) wherein A^1 and A^2 each independently represent a substituted or unsubstituted fused aromatic ring residue having 10 to 20 nuclear carbon atoms;

Ar^1 and Ar^2 each independently represent a hydrogen atom, or a substituted or unsubstituted aryl group having 6 to 20 nuclear carbon atoms, and each of the number of Ar^1s and the number of Ar^2s may be two or more; and

R^1 to R^{10} each independently represent a hydrogen atom, a substituted or unsubstituted aryl group having 6 to 20 nuclear carbon atoms, a substituted or unsubstituted aromatic heterocyclic group having 5 to 24 nuclear atoms, a substituted or unsubstituted alkyl group having 1 to 24 carbon atoms, a halogen atom, or a cyano group, and each of the number of R^9s and the number of R^{10}s may be two or more, provided that no symmetrical group binds to each of 9-position and 10-position of central anthracene;

formula (IV) (formula III, paragraphs [0025]-[0027], compounds 45, 46, and 53) wherein $Ar^{1'}$ and $Ar^{2'}$ each independently represent a substituted or unsubstituted aryl group having 6 to 20 nuclear carbon atoms, and each of the number of $Ar^{1'}$s and the number of $Ar^{2'}$s may be two or more; and

R^1 to R^{10} each independently represent a hydrogen atom, a substituted or unsubstituted aryl group having 6 to 20 nuclear carbon atoms, a substituted or unsubstituted aromatic heterocyclic group having 5 to 24 nuclear atoms, a substituted or unsubstituted alkyl

group having 1 to 24 carbon atoms, a halogen atom, or a cyano group, and each of the number of R^9s and the number of R^{10}s may be two or more, provided that no symmetrical group binds to each of 9-position and 10-position of central anthracene.

52. Regarding Claims 4 and 5, it would have been obvious by one of ordinary skill in the art at the time the invention was made to substitute the anthracene in the white organic electroluminescence device, of Fukuoka '928, with the asymmetric compounds taught by Shi (formulae formulae I-XI and compounds 45-48 and 50-59) to arrive at a white organic electroluminescence device, wherein the light emitting layer comprising an asymmetric compound containing a condensed ring. Both Fukuoka '928 and Shi teach that the same anthracene compounds (formula 1, paragraph [0041] in Fukuoka and formula II, paragraph [0019]-[0021] in Shi) can be used in organic electroluminescence devices, and Shi teaches other anthracene compounds, but are asymmetric (formulae VI-XI, paragraphs [0018], [0025], [0026], and [0027]) that have similar properties anthracene compounds taught by both Fukuoka '928 and Shi. One of ordinary skill in the art would have been motivated to substitute the anthracene compound of Fukuoka '928 with the asymmetric anthracene compounds of Shi because all of the compounds can be used in an electroluminescence device, and because it would be a simple substitution of material for one of ordinary skill in the art that would lead to predictable results of light emission from a light emitting layer comprising of an asymmetric anthracene compound.

53. With respect to claim 8, Fukuoka '928 teaches a white color organic electroluminescence device according, wherein the bluish color dopant comprises at

least one compound selected from a compound containing a fused aromatic ring (paragraphs [0036]-[0041], example 1 paragraphs [0086]-[0092]).

54. With respect to claim 9, Fukuoka '928 teaches a white color organic electroluminescence device (abstract, Fig. 1 objects 8, 6, 5, and 2, paragraphs [0017]-[0022], [0037], and [0041], example 1 paragraphs [0086]-[0092]), comprising the anode (2), the bluish color light emitting layer (5), the yellow-to-reddish color light emitting layer (6), and the cathode (8) in this order, wherein the yellow-to-reddish color light emitting layer contains the same host material as that of the bluish color light emitting layer and a yellow-to-reddish color dopant (paragraph [0020]).

55. With respect to claim 10, Fukuoka '928 teaches a white color electroluminescence device, wherein the yellow-to-reddish color dopant comprises a compound having multiple fluoranthene skeletons (paragraph [0046], compounds 12-15, 20-22, 24, 26, and 27).

56. With respect to claim 11, Fukuoka '928 teaches a white color electroluminescence device, wherein the yellow-to-reddish color dopant comprises a compound having a fluorescent peak wavelength of 540 nm to 700 nm (paragraph [0049]).

57. With respect to claim 12, Fukuoka '928 teaches a white color organic electroluminescence device, wherein each of the bluish color light emitting layer and the yellow-to-reddish color light emitting layer has a thickness of 5 nm or more (paragraphs [0051] and [0052]).

Double Patenting

58. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

59. Claims 1 and 8-12 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 9, 12, 13, 15, and 16 of copending Application No. 2008/0067928 (hereafter "Fukuoka '928") in view of Hatwar (US 2003/0068524) (hereafter "Hatwar").

60. Regarding claim 1 of the instant application, with respect to claim 9 of Fukuoka '928, Fukuoka '928 claims a white color organic electroluminescence device comprising:

a cathode;

an anode; and

one or more organic thin film layers sandwiched between the two electrodes and including at least a light emitting layer, wherein the light emitting layer has a laminate

comprising a bluish color light emitting layer containing a host material and a blue dopant, and a yellow-to-reddish color light emitting layer containing a host material identical to the host material of the blue emitting layer and a yellow-to-red dopant and wherein the host material is a phenyl anthracene derivative.

61. Fukuoka '928 does not claim the light emitting layer comprising an asymmetric compound containing a condensed ring.

62. Hatwar teaches a white color organic electroluminescence device (abstract, Fig. 4 objects 420, 442, 450, and 470, paragraph [0076], Table 1 devices 2-5) comprising:

a cathode (470);

an anode (410); and

one or more organic thin film layers sandwiched between the two electrodes and including at least a light emitting layer (450), wherein the light emitting layer has a laminate comprising a bluish color light emitting layer (450) and a yellow-to-reddish color light emitting layer (442), although Hatwar does not explicitly teach two light emitting layers, Hatwar discloses a hole transporting layer (442) doped with fluorescent dye giving a second light emitting layer; and

the light emitting layer comprises an asymmetric compound containing a condensed ring (Table 1 devices 2-5, TBADN, paragraphs [0060] and [0062]) for the purpose of producing a whole color organic electroluminescence device having high operational stability and requiring low drive voltage (paragraph [0039]). Hatwar teaches an asymmetric phenyl anthracene compound can be used in the light emitting layer (Table 1 devices 2-5, TBADN, paragraphs [0060] and [0062]).

63. Given the teachings of Hatwar, it would have been obvious to one of ordinary skill in the art, to modify the white color organic electroluminescence device, of Fukuoka '928, to contain an asymmetric phenyl anthracene compound in the light emitting layer. One of ordinary skill in the art would have been motivated to make to modification to produce a white color organic electroluminescence device with higher operational stability and lower drive voltage.

64. Regarding claim 8 of the instant application, with respect to claim 12 of Fukuoka '928, claim 8 only differs from claim 12 of Fukuoka '928 for the same reasons claim 1 of the instant application differs from claim 9 of Fukuoka '928 as described above. Therefore, claim 12 of Fukuoka '928 would be modified in the same obvious manner as claim 9 above to arrive at the claimed invention.

65. Regarding claim 9 of the instant application, with respect to claim 9 of Fukuoka '928, claim 9 only differs from claim 1 of Fukuoka '928 for the same reasons claim 1 of the instant application differs from claim 9 of Fukuoka '928 as described above. Therefore, claim 9 of Fukuoka '928 would be modified in the same obvious manner as above to arrive at the claimed invention.

66. Regarding claim 10 of the instant application, with respect to claim 13 of Fukuoka '928, claim 10 only differs from claim 13 of Fukuoka '928 for the same reasons claim 1 of the instant application differs from claim 9 of Fukuoka '928 as described above. Therefore, claim 13 of Fukuoka '928 would be modified in the same obvious manner as claim 9 above to arrive at the claimed invention.

67. Regarding claim 11 of the instant application, with respect to claim 15 of Fukuoka '928, claim 11 only differs from claim 15 of Fukuoka '928 for the same reasons claim 1 of the instant application differs from claim 9 of Fukuoka '928 as described above. Therefore, claim 15 of Fukuoka '928 would be modified in the same obvious manner as claim 9 above to arrive at the claimed invention.

68. Regarding claim 12 of the instant application, with respect to claim 16 of Fukuoka '928, claim 12 only differs from claim 16 of Fukuoka '928 for the same reasons claim 1 of the instant application differs from claim 9 of Fukuoka '928 as described above. Therefore, claim 16 of Fukuoka '928 would be modified in the same obvious manner as claim 9 above to arrive at the claimed invention.

69. This is a provisional obviousness-type double patenting rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew K. Bohaty whose telephone number is (571)270-1148. The examiner can normally be reached on Monday through Thursday 7:30 am to 5:00 pm EST and every other Friday from 7:30 am to 4 pm EST.

70. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael LaVilla can be reached on (571)272-1539. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

71. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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